

Horizontal structural functions in troposphere for radio waves refractivity index by use of ground set of GPS-GLONASS receivers

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Abstract

In this paper we show results of troposphere fluctuation analysis and its influence on radiowaves refractive index variations. For comparison of inhomogeneous impurities structure we used electromagnetic waves refraction index data which don't depend on impurity but depend on atmospheric parameters only. Our main object of investigation is a mesoscale process in troposphere. We can estimate space structure of atmospheric parameters, using the data from network based on Global Navigation Satellite System receivers. We used structure function to estimate characteristics of impurities and refraction index fluctuation. Function shows the contribution of the processes of the defined scale in the total variance of the fluctuations. The received structure functions demonstrate increasing with distance between stations. The results show a significant effect on electromagnetic wave refraction index caused by the mesoscale troposphere process.
